# Dansyl fluoride

## sc-218071

**Material Safety Data Sheet**

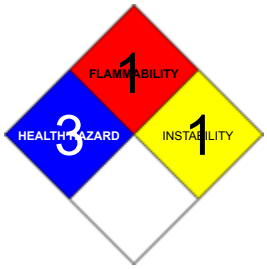
| Hazard Alert Code Key: | EXTREME | HIGH | MODERATE | LOW |
|---|---|---|---|---|

## Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

### PRODUCT NAME
Dansyl fluoride

### STATEMENT OF HAZARDOUS NATURE
**CONSIDERED A HAZARDOUS SUBSTANCE ACCORDING TO OSHA 29 CFR 1910.1200.**

### NFPA




### SUPPLIER
Santa Cruz Biotechnology, Inc.
2145 Delaware Avenue
Santa Cruz, California 95060
800.457.3801 or 831.457.3800

**EMERGENCY**
ChemWatch
Within the US & Canada: 877-715-9305
Outside the US & Canada: +800 2436 2255
(1-800-CHEMCALL) or call +613 9573 3112

### SYNONYMS
C12-H12-F-N-O2-S, 1-fluorosulfonyl-5-dimethylaminophthalene, "dimethylaminonaphthalenesulfonyl fluoride", "1-dimethylaminonaphthalene-5-sulfonyl fluoride", "1-(dimethylamino)-5-naphthalenesulfonyl fluoride", "5-dimethylaminonaphthalene-1-sulfonyl fluoride", "5-dimethylaminonaphthyl-5-sulfonyl fluoride"

## Section 2 - HAZARDS IDENTIFICATION

### CHEMWATCH HAZARD RATINGS

| | | Min | Max |
|---|---|---|---|
| Flammability | 1 | | |
| Toxicity | 2 | | |
| Body Contact | 4 | | |
| Reactivity | 1 | | |
| Chronic | 2 | | |

Min/Nil=0
Low=1
Moderate=2
High=3
Extreme=4

### CANADIAN WHMIS SYMBOLS

## EMERGENCY OVERVIEW

### RISK

Causes severe burns.
Risk of serious damage to eyes.

### POTENTIAL HEALTH EFFECTS

### ACUTE HEALTH EFFECTS

### SWALLOWED

■ Ingestion of acidic corrosives may produce burns around and in the mouth, the throat and oesophagus.
Immediate pain and difficulties in swallowing and speaking may also be evident.
■ Accidental ingestion of the material may be damaging to the health of the individual.
■ Fluoride causes severe loss of calcium in the blood, with symptoms appearing several hours later including painful and rigid muscle contractions of the limbs.
Cardiovascular collapse can occur and may cause death with increased heart rate and other heart rhythm irregularities.

### EYE

■ The material can produce severe chemical burns to the eye following direct contact. Vapours or mists may be extremely irritating.
■ If applied to the eyes, this material causes severe eye damage.
■ Direct eye contact with acid corrosives may produce pain, tears, sensitivity to light and burns.
Mild burns of the epithelia generally recover rapidly and completely.
■ Experiments in which a 20-percent aqueous solution of hydrofluoric acid (hydrogen fluoride) was instilled into the eyes of rabbits caused immediate damage in the form of total corneal opacification and conjunctival ischemia; within an hour, corneal stroma edema occurred, followed by necrosis of anterior ocular structures.

### SKIN

■ The material can produce severe chemical burns following direct contactwith the skin.
■ Skin contact with acidic corrosives may result in pain and burns; these may be deep with distinct edges and may heal slowly with the formation of scar tissue.
■ Skin contact is not thought to have harmful health effects (as classified under EC Directives); the material may still produce health damage following entry through wounds, lesions or abrasions.
■ Fluorides are easily absorbed through the skin and cause death of soft tissue and erode bone.
Healing is delayed and death of tissue may continue to spread beneath skin.
■ Open cuts, abraded or irritated skin should not be exposed to this material.
■ Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects.
Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.
■ Solution of material in moisture on the skin, or perspiration, may markedly increase skin corrosion and accelerate tissue destruction.

### INHALED

■ The material can cause respiratory irritation in some persons.
The body's response to such irritation can cause further lung damage.
■ Corrosive acids can cause irritation of the respiratory tract, with coughing, choking and mucous membrane damage.
There may be dizziness, headache, nausea and weakness.
■ Persons with impaired respiratory function, airway diseases and conditions such as emphysema or chronic bronchitis, may incur further disability if excessive concentrations of particulate are inhaled.
If prior damage to the circulatory or nervous systems has occurred or if kidney damage has been sustained, proper screenings should be conducted on individuals who may be exposed to further risk if handling and use of the material result in excessive exposures.
■ Acute effects of fluoride inhalation include irritation of nose and throat, coughing and chest discomfort.
A single acute over-exposure may even cause nose bleed.
■ Acute inhalation exposures to hydrogen fluoride (hydrofluoric acid) vapours produce severe eye, nose, and throat irritation; delayed fever, cyanosis, and pulmonary edema; and may cause death.
Even fairly low airborne concentrations of hydrogen fluoride produce rapid onset of eye, nose, and throat irritation.

### CHRONIC HEALTH EFFECTS

■ Repeated or prolonged exposure to acids may result in the erosion of teeth, swelling and/or ulceration of mouth lining. Irritation of airways to lung, with cough, and inflammation of lung tissue often occurs. Chronic exposure may inflame the skin or conjunctiva.
Long-term exposure to respiratory irritants may result in disease of the airways involving difficult breathing and related systemic problems.
Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure.
Long term exposure to high dust concentrations may cause changes in lung function i.e. pneumoconiosis; caused by particles less than 0.5 micron penetrating and remaining in the lung. Prime symptom is breathlessness; lung shadows show on X-ray.
Extended exposure to inorganic fluorides causes fluorosis, which includes signs of joint pain and stiffness, tooth discolouration, nausea and vomiting, loss of appetite, diarrhoea or constipation, weight loss, anaemia, weakness and general unwellness. There may also be frequent urination and thirst. Redness, itchiness and allergy-like inflammation of the skin and mouth cavity can occur. The central

nervous system may be involved.
Hydrogen fluoride easily penetrates the skin and causes destruction and corrosion of the bone and underlying tissue. Ingestion causes severe pains and burns in the mouth and throat and blood calcium levels are dangerously reduced. Symptoms include spasm and twitching of the muscles, high fever, convulsions and general extreme pain. Inhalation may cause corrosion of the throat, nose and lungs, leading to severe inflammation and lung swelling.

## Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

| NAME | CAS RN | % |
|---|---|---|
| dansyl fluoride | 34523-28-9 | >98 |
| hydrolysis yields | | |
| hydrogen fluoride | 7664-39-3 | |

## Section 4 - FIRST AID MEASURES

### SWALLOWED
- For advice, contact a Poisons Information Centre or a doctor at once.
- Urgent hospital treatment is likely to be needed.
- If swallowed do NOT induce vomiting.
- If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.

### EYE
If this product comes in contact with the eyes
- Immediately hold eyelids apart and flush the eye continuously with running water.
- Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
- Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.
- Transport to hospital or doctor without delay.

### SKIN
If skin or hair contact occurs
- Immediately flush body and clothes with large amounts of water, using safety shower if available.
- Quickly remove all contaminated clothing, including footwear.
- Wash skin and hair with running water. Continue flushing with water until advised to stop by the Poisons Information Centre.
- Transport to hospital, or doctor.

### INHALED
- If fumes or combustion products are inhaled remove from contaminated area.
- Lay patient down. Keep warm and rested.
- Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
- Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.
- Inhalation of vapours or aerosols (mists, fumes) may cause lung oedema.
- Corrosive substances may cause lung damage (e.g. lung oedema, fluid in the lungs).
- As this reaction may be delayed up to 24 hours after exposure, affected individuals need complete rest (preferably in semi-recumbent posture) and must be kept under medical observation even if no symptoms are (yet) manifested.
- Before any such manifestation, the administration of a spray containing a dexamethasone derivative or beclomethasone derivative may be considered.

### NOTES TO PHYSICIAN
■ Treat symptomatically.
For acute or short term repeated exposures to strong acids
- Airway problems may arise from laryngeal edema and inhalation exposure. Treat with 100% oxygen initially.
- Respiratory distress may require cricothyroidotomy if endotracheal intubation is contraindicated by excessive swelling
- Intravenous lines should be established immediately in all cases where there is evidence of circulatory compromise.
- Strong acids produce a coagulation necrosis characterised by formation of a coagulum (eschar) as a result of the dessicating action of the acid on proteins in specific tissues.

For acute or short term repeated exposures to fluorides
- Fluoride absorption from gastro-intestinal tract may be retarded by calcium salts, milk or antacids.
- Fluoride particulates or fume may be absorbed through the respiratory tract with 20-30% deposited at alveolar level.
- Peak serum levels are reached 30 mins. post-exposure; 50% appears in the urine within 24 hours.
- For acute poisoning (endotracheal intubation if inadequate tidal volume), monitor breathing and evaluate/monitor blood pressure and pulse frequently since shock may supervene with little warning. Monitor ECG immediately; watch for arrhythmias and evidence of

Q-T prolongation or T-wave changes. Maintain monitor. Treat shock vigorously with isotonic saline (in 5% glucose) to restore blood volume and enhance renal excretion.

## Section 5 - FIRE FIGHTING MEASURES

| | |
|---|---|
| Vapour Pressure (mmHG) | Negligible |
| Upper Explosive Limit (%) | Not available. |
| Specific Gravity (water=1) | Not available |
| Lower Explosive Limit (%) | Not available |

**EXTINGUISHING MEDIA**

- Foam.
- Dry chemical powder.
- BCF (where regulations permit).
- Carbon dioxide.

**FIRE FIGHTING**

- Alert Fire Brigade and tell them location and nature of hazard.
- Wear full body protective clothing with breathing apparatus.
- Prevent, by any means available, spillage from entering drains or water course.
- Use fire fighting procedures suitable for surrounding area.

When any large container (including road and rail tankers) is involved in a fire, consider evacuation by 800 metres in all directions.

**GENERAL FIRE HAZARDS/HAZARDOUS COMBUSTIBLE PRODUCTS**

- Combustible.
- Slight fire hazard when exposed to heat or flame.
- Acids may react with metals to produce hydrogen, a highly flammable and explosive gas.
- Heating may cause expansion or decomposition leading to violent rupture of containers.

Combustion products include carbon monoxide (CO), carbon dioxide (CO2), hydrogen fluoride, nitrogen oxides (NOx), sulfur oxides (SOx), other pyrolysis products typical of burning organic material.

**FIRE INCOMPATIBILITY**

- Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result

## Section 6 - ACCIDENTAL RELEASE MEASURES

**MINOR SPILLS**

- Remove all ignition sources.
- Clean up all spills immediately.
- Avoid contact with skin and eyes.
- Control personal contact by using protective equipment.
- Drains for storage or use areas should have retention basins for pH adjustments and dilution of spills before discharge or disposal of material.
- Check regularly for spills and leaks.

**MAJOR SPILLS**

- Clear area of personnel and move upwind.
- Alert Fire Brigade and tell them location and nature of hazard.
- Wear full body protective clothing with breathing apparatus.
- Prevent, by any means available, spillage from entering drains or water course.

## Section 7 - HANDLING AND STORAGE

### PROCEDURE FOR HANDLING

- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- WARNING To avoid violent reaction, ALWAYS add material to water and NEVER water to material.

Empty containers may contain residual dust which has the potential to accumulate following settling. Such dusts may explode in the presence of an appropriate ignition source.

- Do NOT cut, drill, grind or weld such containers.
- In addition ensure such activity is not performed near full, partially empty or empty containers without appropriate workplace safety authorisation or permit.

### RECOMMENDED STORAGE METHODS

- DO NOT use aluminium or galvanised containers
- Check regularly for spills and leaks
- Lined metal can, lined metal pail/ can.
- Plastic pail.
- Polyliner drum.
- Packing as recommended by manufacturer.

For low viscosity materials

- Drums and jerricans must be of the non-removable head type.
- Where a can is to be used as an inner package, the can must have a screwed enclosure.

<.

- Material is corrosive to most metals, glass and other siliceous materials.

### STORAGE REQUIREMENTS

- Store in original containers.
- Keep containers securely sealed.
- Store in a cool, dry, well-ventilated area.
- Store away from incompatible materials and foodstuff containers.

May decompose in moist air or water.

## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

### EXPOSURE CONTROLS

| Source | Material | TWA ppm | TWA mg/m³ | STEL ppm | STEL mg/m³ | Peak ppm | Peak mg/m³ | TWA F/CC | Notes |
|---|---|---|---|---|---|---|---|---|---|
| US ACGIH Threshold Limit Values (TLV) | dansyl fluoride (Fluorides, as F) | | 2.5 | | | | | | TLV® Basis Bone dam; fluorosis ; BEI |
| Canada - Prince Edward Island Occupational Exposure Limits | dansyl fluoride (Fluorides, as F) | | 2.5 | | | | | | TLV® Basis Bone dam; fluorosis ; BEI |
| US - Hawaii Air Contaminant Limits | dansyl fluoride (Fluorides (as F)) | | 2.5 | | | | | | (CAS (Varies with compound)) |
| Canada - Ontario Occupational Exposure Limits | dansyl fluoride (Particles (Insoluble or Poorly Soluble) Not Otherwise) | | 10 (I) | | | | | | |
| Canada - British Columbia Occupational Exposure Limits | dansyl fluoride (Particles (Insoluble or Poorly Soluble) Not Otherwise Classified (PNOC)) | | 10 (N) | | | | | | |
| Canada - Ontario Occupational Exposure Limits | dansyl fluoride (Specified (PNOS) / Particules (insolubles ou peu solubles) non précisées par ailleurs) | | 3 (R) | | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants | dansyl fluoride (Particulates not otherwise regulated Respirable fraction) | | 5 | | |
| US - California Permissible Exposure Limits for Chemical Contaminants | dansyl fluoride (Particulates not otherwise regulated Respirable fraction) | | 5 | | (n) |
| US - Oregon Permissible Exposure Limits (Z-1) | dansyl fluoride (Particulates not otherwise regulated (PNOR) (f) Total Dust) | - | 10 | | Bold print identifies substances for which the Oregon Permissible Exposure Limits (PELs) are different than the federal Limits. PNOR means “particles not otherwise regulated.” |
| US - Michigan Exposure Limits for Air Contaminants | dansyl fluoride (Particulates not otherwise regulated, Respirable dust) | | 5 | | |
| US - Oregon Permissible Exposure Limits (Z-1) | dansyl fluoride (Particulates not otherwise regulated (PNOR) (f) Respirable Fraction) | - | 5 | | Bold print identifies substances for which the Oregon Permissible Exposure Limits (PELs) are different than the federal Limits. PNOR means “particles not otherwise regulated.” |
| US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants | dansyl fluoride (Particulates not otherwise regulated (PNOR)(f)-Respirable fraction) | | 5 | | |
| US - Minnesota Permissible Exposure Limits (PELs) | hydrogen fluoride (Hydrogen fluoride (as F)) | 3 | | 6 | |
| US ATSDR Minimal Risk Levels for Hazardous Substances (MRLs) | hydrogen fluoride (HYDROGEN FLUORIDE) | 0.02 | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Canada - British Columbia Occupational Exposure Limits | hydrogen fluoride (Hydrogen fluoride, as F) | | | | C 2 | | | |
| US ACGIH Threshold Limit Values (TLV) | hydrogen fluoride (Hydrogen fluoride, as F) | 0.5 | | | 2 | | | TLV® Basis URT, LRT, skin & eye irr; fluorosis ; BEI |
| US NIOSH Recommended Exposure Limits (RELs) | hydrogen fluoride () | 3 | 2.5 | | 6 | 5 | | [15-minute] |
| Canada - Alberta Occupational Exposure Limits | hydrogen fluoride (Hydrogen fluoride, as F) | 0.5 | 0.4 | | 2 | 1.6 | | |
| US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants | hydrogen fluoride (Hydrogen fluoride (as F)) | 3 | | 6 | | | | |
| US - Vermont Permissible Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants | hydrogen fluoride (Hydrogen fluoride (as F)) | | See Table Z-2 | | | | | |
| US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants | hydrogen fluoride (Hydrogen fluoride (as F)) | 3 | | 6 | | | | |
| US - Idaho - Acceptable Maximum Peak Concentrations | hydrogen fluoride (Hydrogen Fluoride (Z37.26-1969)) | 3 | | | | | | |
| US - California Permissible Exposure Limits for Chemical Contaminants | hydrogen fluoride (Hydrogen fluoride, as F) | 3 | 2.5 | 6 | | | | |
| US - Idaho - Limits for Air Contaminants | hydrogen fluoride (Hydrogen fluoride (as F)) | | [2] | | | | | |
| US - Alaska Limits for Air Contaminants | hydrogen fluoride (Hydrogen fluoride (as F)) | 3 | | 6 | | | | |
| US - Michigan Exposure Limits for Air Contaminants | hydrogen fluoride (Hydrogen fluoride (as F)) | 3 | | 6 | | | | |
| US - Hawaii Air Contaminant Limits | hydrogen fluoride (Hydrogen fluoride (as F)) | 3 | | 6 | | | | |
| Canada - Yukon Permissible Concentrations for | hydrogen fluoride (Hydrogen fluoride) | 3 | 2 | 3 | 2 | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Airborne Contaminant Substances | | | | | | | | |
| US - Washington Permissible exposure limits of air contaminants | hydrogen fluoride (Hydrogen fluoride) | | | | | 3 | | |
| Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits | hydrogen fluoride (Hydrogen fluoride, (as F)) | 0.5 | | | | | | |
| Canada - Northwest Territories Occupational Exposure Limits (English) | hydrogen fluoride (Hydrogen fluoride (as F)) | 3 | 2.5 | 6 | 4.9 | | | |
| US - Wyoming Toxic and Hazardous Substances Table Z-2 Acceptable ceiling concentration, Acceptable maximum peak above the acceptable ceiling concentration for an 8-hr shift | hydrogen fluoride (Hydrogen fluoride (Z37.28-1969)) | 3 | | | | | | |
| Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English) | hydrogen fluoride (Hydrogen fluoride (as F)) | | | | | 3 | 2.6 | |
| US - Oregon Permissible Exposure Limits (Z-2) | hydrogen fluoride (Hydrogen fluoride (Z37.28-1969)) | 3 | | | | | | |
| Canada - Nova Scotia Occupational Exposure Limits | hydrogen fluoride (Hydrogen fluoride) | 0.5 | | | | 2 | | Measured as F. TLV Basis upper and lower respiratory tract, skin & eye irritation; fluorosis |
| Canada - Prince Edward Island Occupational Exposure Limits | hydrogen fluoride (Hydrogen fluoride, as F) | 0.5 | | | | 2 | | TLV® Basis URT, LRT, skin & eye irr; fluorosis ; BEI |

**PERSONAL PROTECTION**




### RESPIRATOR
- Type B-P Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 1432000 & 1492001, ANSI Z88 or national equivalent)

### EYE
- Safety glasses with unperforated side shields may be used where continuous eye protection is desirable, as in laboratories; spectacles are not sufficient where complete eye protection is needed such as when handling bulk-quantities, where there is a danger of splashing, or if the material may be under pressure
- Chemical goggles.whenever there is a danger of the material coming in contact with the eyes; goggles must be properly fitted
- Full face shield (20 cm, 8 in minimum) may be required for supplementary but never for primary protection of eyes; these afford face protection.
- Alternatively a gas mask may replace splash goggles and face shields.

### HANDS/FEET
- Elbow length PVC gloves

Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include
- frequency and duration of contact,
- chemical resistance of glove material,
- glove thickness and
- dexterity

### OTHER
- Overalls.
- PVC Apron.
- PVC protective suit may be required if exposure severe.
- Eyewash unit.

### ENGINEERING CONTROLS
■ Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.
The basic types of engineering controls are
Process controls which involve changing the way a job activity or process is done to reduce the risk.
Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment.

## Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

### PHYSICAL PROPERTIES

Corrosive.
Acid.

| | | | |
|---|---|---|---|
| State | DIVIDED SOLID | Molecular Weight | 253.29 |
| Melting Range (°F) | 118- 122 | Viscosity | Not Applicable |
| Boiling Range (°F) | Not available | Solubility in water (g/L) | Reacts |
| Flash Point (°F) | Not available | pH (1% solution) | Not available |
| Decomposition Temp (°F) | Not Available | pH (as supplied) | Not applicable |
| Autoignition Temp (°F) | Not available | Vapour Pressure (mmHG) | Negligible |
| Upper Explosive Limit (%) | Not available. | Specific Gravity (water=1) | Not available |
| Lower Explosive Limit (%) | Not available | Relative Vapour Density (air=1) | >1 |
| Volatile Component (%vol) | Negligible | Evaporation Rate | Not applicable |

### APPEARANCE
Crystalline solid; does not mix well with water. Soluble in acetone, pyridine, benzene, dioxane.

## Section 10 - CHEMICAL STABILITY

### CONDITIONS CONTRIBUTING TO INSTABILITY
- Contact with alkaline material liberates heat
- Presence of incompatible materials.
- Product is considered stable.
- Hazardous polymerisation will not occur.

### STORAGE INCOMPATIBILITY

■ Salts of inorganic fluoride

- react with water forming acidic solutions.
- are violent reactive with boron, bromine pentafluoride,bromine trifluoride, calcium disilicide, calcium hydride, oxygen difluoride, platinum, potassium.
- in aqueous solutions are incompatible with sulfuric acid, alkalis, ammonia, aliphatic amines, alkanolamines, alkylene oxides, amides, epichlorohydrin, isocyanates, nitromethane, organic anhydrides, vinyl acetate.
- corrode metals in presence of moisture
- Reacts with mild steel, galvanised steel / zinc producing hydrogen gas which may form an explosive mixture with air.

Hydrogen fluoride

- reacts violently with strong oxidisers, acetic anhydride, alkalis, 2-aminoethanol, arsenic trioxide (with generation of heat), bismuthic acid, calcium oxide, chlorosulfonic acid, cyanogen fluoride, ethylenediamine, ethyleneimine, fluorine (fluorine gas reacts vigorously with a 50% hydrofluoric acid solution and may burst into flame), nitrogen trifluoride, N-phenylazopiperidine, oleum, oxygen difluoride, phosphorus pentoxide, potassium permanganate, potassium tetrafluorosilicate(2-), beta-propiolactone, propylene oxide, sodium, sodium tetrafluorosilicate, sulfuric acid, vinyl acetate
- reacts (possibly violently) with aliphatic amines, alcohols, alkanolamines, alkylene oxides, aromatic amines, amides, ammonia, ammonium hydroxide, epichlorohydrin, isocyanates, metal acetylides, metal silicides, methanesulfonic acid, nitrogen compounds, organic anhydrides, oxides, silicon compounds, vinylidene fluoride
- attacks glass and siliceous materials, concrete, ceramics, metals (flammable hydrogen gas may be produced), metal alloys, some plastics, rubber coatings, leather, and most other materials with the exception of lead, platinum, polyethylene, wax.
- Segregate from alcohol, water.
- Avoid strong bases.
- Segregate from alkalies, oxidising agents and chemicals readily decomposed by acids, i.e. cyanides, sulfides, carbonates.
- NOTE May develop pressure in containers; open carefully. Vent periodically.

Sulfonyl halides are reactive sulfonic acid derivatives similar in properties and reactivities to acid chlorides of carboxylates. The attack of a nucleophile on a sulfonyl halide involves temporary formation of a pentavalent intermediate which is highly crowded and unstable.

For incompatible materials - refer to Section 7 - Handling and Storage.

## Section 11 - TOXICOLOGICAL INFORMATION

dansyl fluoride

### TOXICITY AND IRRITATION

■ Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound.
The material may be irritating to the eye, with prolonged contact causing inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.
The material may produce respiratory tract irritation, and result in damage to the lung including reduced lung function.
The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin.
No significant acute toxicological data identified in literature search.

### CARCINOGEN

| | | | |
|---|---|---|---|
| Fluorides, as F | US ACGIH Threshold Limit Values (TLV) - Carcinogens | Carcinogen Category | A4 |
| dansyl fluoride | US - Maine Chemicals of High Concern List | Carcinogen | A4 |
| dansyl fluoride | US - Maine Chemicals of High Concern List | Carcinogen | |
| dansyl fluoride | Canada - Prince Edward Island Occupational Exposure Limits - Carcinogens | Notes | TLV® Basis Bone dam; fluorosis ; BEI |
| Acid mists, strong inorganic | International Agency for Research on Cancer (IARC) - Agents Reviewed by the IARC Monographs | Group | 1 |
| Fluorides (inorganic, used in drinking-water) | International Agency for Research on Cancer (IARC) - Agents Reviewed by the IARC Monographs | Group | 3 |
| hydrogen fluoride | US - Rhode Island Hazardous Substance List | IARC | |
| hydrogen fluoride | US - Maine Chemicals of High Concern List | Carcinogen | A4 |
| hydrogen fluoride | Canada - Prince Edward Island Occupational Exposure Limits - Carcinogens | Notes | TLV® Basis Bone dam; fluorosis ; BEI |

| | | | |
|---|---|---|---|
| hydrogen fluoride | Canada - Prince Edward Island Occupational Exposure Limits - Carcinogens | Notes | TLV Basis bone damage; fluorosis. BEI |

**SKIN**

| | | | |
|---|---|---|---|
| hydrogen fluoride | US ACGIH Threshold Limit Values (TLV) - Skin | Skin Designation | Yes |
| hydrogen fluoride | US AIHA Workplace Environmental Exposure Levels (WEELs) - Skin | Notes | TLV® Basis URT, LRT, skin & eye irr; fluorosis ; BEI |
| hydrogen fluoride | US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants - Skin | Skin Designation | Yes |
| hydrogen fluoride | US - Minnesota Permissible Exposure Limits (PELs) - Skin | Skin Designation | Yes |
| hydrogen fluoride | US OSHA Permissible Exposure Levels (PELs) - Skin | Skin Designation | Yes |

## Section 12 - ECOLOGICAL INFORMATION

This material and its container must be disposed of as hazardous waste.

### Ecotoxicity

| Ingredient | Persistence: Water/Soil | Persistence: Air | Bioaccumulation | Mobility |
|---|---|---|---|---|
| hydrogen fluoride | No Data Available | No Data Available | LOW | |

### GESAMP/EHS COMPOSITE LIST - GESAMP Hazard Profiles

| Name / Cas No / RTECS No | EHS | TRN | A1a | A1b | A1 | A2 | B1 | B2 | C1 | C2 | C3 | D1 | D2 | D3 | E1 | E2 | E3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Poly(2+)cyclic aromatics / CAS:34523-28-9 / | 2246 | 574 | 4 | | 4 | NR | (4) | NI | (1) | (1) | (2) | (1) | (1) | CM | | S | 3 |

Legend: EHS=EHS Number (EHS=GESAMP Working Group on the Evaluation of the Hazards of Harmful Substances Carried by Ships) NRT=Net Register Tonnage, A1a=Bioaccumulation log Pow, A1b=Bioaccumulation BCF, A1=Bioaccumulation, A2=Biodegradation, B1=Acuteaquatic toxicity LC/ECIC50 (mg/l), B2=Chronic aquatic toxicity NOEC (mg/l), C1=Acute mammalian oral toxicity LD50 (mg/kg), C2=Acutemammalian dermal toxicity LD50 (mg/kg), C3=Acute mammalian inhalation toxicity LC50 (mg/kg), D1=Skin irritation & corrosion, D2=Eye irritation& corrosion, D3=Long-term health effects, E1=Tainting, E2=Physical effects on wildlife & benthic habitats, E3=Interference with coastal amenities, For column A2: R=Readily biodegradable, NR=Not readily biodegradable. For column D3: C=Carcinogen, M=Mutagenic, R=Reprotoxic, S=Sensitising, A=Aspiration hazard, T=Target organ systemic toxicity, L=Lunginjury, N=Neurotoxic, I=Immunotoxic. For column E1: NT=Not tainting (tested), T=Tainting test positive. For column E2: Fp=Persistent floater, F=Floater, S=Sinking substances. The numerical scales start from 0 (no hazard), while higher numbers reflect increasing hazard. (GESAMP/EHS Composite List of Hazard Profiles - Hazard evaluation of substances transported by ships)

## Section 13 - DISPOSAL CONSIDERATIONS

### US EPA Waste Number & Descriptions

A. General Product Information
Corrosivity characteristic: use EPA hazardous waste number D002 (waste code C)
B. Component Waste Numbers
When hydrogen fluoride is present as a solid waste as a discarded commercial chemical product, off-specification species, as a container residue, or a spill residue, use EPA waste number U134 (waste code C,T).

### Disposal Instructions

All waste must be handled in accordance with local, state and federal regulations.

Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked.
A Hierarchy of Controls seems to be common - the user should investigate:

- Reduction
- Reuse
- Recycling
- Disposal (if all else fails)

This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate. In most instances the supplier of the material should be consulted.

- DO NOT allow wash water from cleaning or process equipment to enter drains.
- It may be necessary to collect all wash water for treatment before disposal.
- In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first.
- Where in doubt contact the responsible authority.

Recycle wherever possible.

- Consult manufacturer for recycling options or consult local or regional waste management authority for disposal if no suitable treatment or disposal facility can be identified.
- Treat and neutralise at an approved treatment plant. Treatment should involve: Mixing or slurrying in water; Neutralisation with soda-lime or soda-ash followed by: burial in a land-fill specifically licenced to accept chemical and / or pharmaceutical wastes or Incineration in a licenced apparatus (after admixture with suitable combustible material)
- Decontaminate empty containers with 5% aqueous sodium hydroxide or soda ash, followed by water. Observe all label safeguards until containers are cleaned and destroyed.

## Section 14 - TRANSPORTATION INFORMATION

**DOT:**

| | | | |
|---|---|---|---|
| Symbols: | None | Hazard class or Division: | 8 |
| Identification Numbers: | UN3261 | PG: | II |
| Label Codes: | 8 | Special provisions: | IB8, IP2, IP4, T3, TP33 |
| Packaging: Exceptions: | 154 | Packaging: Non-bulk: | 212 |
| Packaging: Exceptions: | 154 | Quantity limitations: Passenger aircraft/rail: | 15 kg |
| Quantity Limitations: Cargo aircraft only: | 50 kg | Vessel stowage: Location: | B |
| Vessel stowage: Other: | None | | |

Hazardous materials descriptions and proper shipping names:
Corrosive solid, acidic, organic, n.o.s.

**Air Transport IATA:**

| | | | |
|---|---|---|---|
| ICAO/IATA Class: | 8 | ICAO/IATA Subrisk: | None |
| UN/ID Number: | 3261 | Packing Group: | II |
| Special provisions: | A3 | | |
| Cargo Only | | | |
| Packing Instructions: | 863 | Maximum Qty/Pack: | 50 kg |
| Passenger and Cargo | | Passenger and Cargo | |
| Packing Instructions: | 859 | Maximum Qty/Pack: | 15 kg |
| Passenger and Cargo Limited Quantity | | Passenger and Cargo Limited Quantity | |
| Packing Instructions: | Y844 | Maximum Qty/Pack: | 5 kg |

Shipping name:CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S.(contains dansyl fluoride)

**Maritime Transport IMDG:**

| | | | |
|---|---|---|---|
| IMDG Class: | 8 | IMDG Subrisk: | None |
| UN Number: | 3261 | Packing Group: | II |
| EMS Number: | F-A,S-B | Special provisions: | 274 |

Limited Quantities: 1 kg

Shipping name:CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S.(contains dansyl fluoride)

## Section 15 - REGULATORY INFORMATION

**dansyl fluoride (CAS: 34523-28-9) is found on the following regulatory lists;**

"Canada Non-Domestic Substances List (NDSL)","US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory"

**Regulations for ingredients**

**hydrogen fluoride (CAS: 7664-39-3) is found on the following regulatory lists;**

"Canada - Alberta Ambient Air Quality Objectives","Canada - Alberta Occupational Exposure Limits","Canada - British Columbia Occupational Exposure Limits","Canada - Northwest Territories Occupational Exposure Limits (English)","Canada - Nova Scotia Occupational Exposure Limits","Canada - Prince Edward Island Occupational Exposure Limits","Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English)","Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits","Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances","Canada Domestic Substances List (DSL)","Canada Environmental Quality Guidelines (EQGs) Air","Canada Ingredient Disclosure List (SOR/88-64)","Canada National Pollutant Release Inventory (NPRI)","Canada Toxicological Index Service - Workplace Hazardous Materials Information System - WHMIS (English)","OECD List of High Production Volume (HPV) Chemicals","The Australia Group Export Control List: Chemical Weapons Precursors","US - Alaska Limits for Air Contaminants","US - California Occupational Safety and Health Regulations (CAL/OSHA) - Hazardous Substances List","US - California OEHHA/ARB - Acute Reference Exposure Levels and Target Organs (RELs)","US - California OEHHA/ARB - Chronic Reference Exposure Levels and Target Organs (CRELs)","US - California Permissible Exposure Limits for Chemical Contaminants","US - California Toxic Air Contaminant List Category II","US - Connecticut Hazardous Air Pollutants","US - Delaware Pollutant Discharge Requirements - Reportable Quantities","US - Hawaii Air Contaminant Limits","US - Idaho - Acceptable Maximum Peak Concentrations","US - Idaho - Limits for Air Contaminants","US - Louisiana Minimum Emission Rates Toxic Air Pollutants","US - Louisiana Toxic Air Pollutant Ambient Air Standards","US - Massachusetts Oil & Hazardous Material List","US - Michigan Exposure Limits for Air Contaminants","US - Minnesota Hazardous Substance List","US - Minnesota Permissible Exposure Limits (PELs)","US - New Jersey Right to Know Hazardous Substances (English)","US - North Dakota Air Pollutants - Guideline Concentrations","US - Oregon Hazardous Materials","US - Oregon Permissible Exposure Limits (Z-1)","US - Oregon Permissible Exposure Limits (Z-2)","US - Pennsylvania - Hazardous Substance List","US - Rhode Island Hazardous Substance List","US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants","US - Vermont Hazardous Constituents","US - Vermont Hazardous wastes which are Discarded Commercial Chemical Products or Off-Specification Batches of Commercial Chemical Products or Spill Residues of Either","US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants","US - Vermont Permissible Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants","US - Washington Dangerous waste constituents list","US - Washington Discarded Chemical Products List - ""U"" Chemical Products","US - Washington Permissible exposure limits of air contaminants","US - Washington Toxic air pollutants and their ASIL, SQER and de minimis emission values","US - Wisconsin Control of Hazardous Pollutants - Emission Thresholds, Standards and Control Requirements (Hazardous Air Contaminants)","US - Wisconsin Control of Hazardous Pollutants - Substances of Concern for Sources of Incidental Emissions of Hazardous Air Contaminants","US - Wyoming List of Highly Hazardous Chemicals, Toxics and Reactives","US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants","US - Wyoming Toxic and Hazardous Substances Table Z-2 Acceptable ceiling concentration, Acceptable maximum peak above the acceptable ceiling concentration for an 8-hr shift","US ACGIH Threshold Limit Values (TLV)","US ATSDR Minimal Risk Levels for Hazardous Substances (MRLs)","US Clean Air Act - Hazardous Air Pollutants","US CWA (Clean Water Act) - List of Hazardous Substances","US CWA (Clean Water Act) - Reportable Quantities of Designated Hazardous Substances","US Department of Homeland Security Chemical Facility Anti-Terrorism Standards - Chemicals of Interest","US Department of Transportation (DOT) List of Hazardous Substances and Reportable Quantities - Hazardous Substances Other Than Radionuclides","US DOE Temporary Emergency Exposure Limits (TEELs)","US EPA Acute Exposure Guideline Levels (AEGLs) - Final","US EPA Master Testing List - Index I Chemicals Listed","US EPCRA Section 313 Chemical List","US FDA Indirect Food Additives: Adhesives and Components of Coatings - Substances for Use Only as Components of Adhesives - Adhesives","US FDA List of ""Indirect"" Additives Used in Food Contact Substances","US List of Lists - Consolidated List of Chemicals Subject to EPCRA, CERCLA and Section 112(r) of the Clean Air Act","US NFPA 45 Fire Protection for Laboratories Using Chemicals - Flammability Characteristics of Common Compressed and Liquefied Gases","US NIOSH Recommended Exposure Limits (RELs)","US OSHA List of Highly Hazardous Chemicals, Toxics and Reactives","US OSHA Permissible Exposure Levels (PELs) - Table Z1","US OSHA Permissible Exposure Levels (PELs) - Table Z2","US Postal Service (USPS) Hazardous Materials Table: Postal Service Mailability Guide","US RCRA (Resource Conservation & Recovery Act) - Hazardous Constituents - Appendix VIII to 40 CFR 261","US RCRA (Resource Conservation & Recovery Act) - List of Hazardous Wastes","US SARA Section 302 Extremely Hazardous Substances","US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory"

## Section 16 - OTHER INFORMATION

**LIMITED EVIDENCE**

■ Ingestion may produce health damage*.

■ Cumulative effects may result following exposure*.

* (limited evidence).

**Denmark Advisory list for selfclassification of dangerous substances**

| Substance | CAS | Suggested codes |
|---|---|---|
| dansyl fluoride | 34523- 28- 9 | N; R51/53 |
| hydrogen fluoride | 7664- 39- 3 | N; R51/53 |

■ Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.
A list of reference resources used to assist the committee may be found at:
www.chemwatch.net/references.

■ The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings.

■ For detailed advice on Personal Protective Equipment, refer to the following U.S. Regulations and Standards:
OSHA Standards - 29 CFR:
1910.132 - Personal Protective Equipment - General requirements
1910.133 - Eye and face protection
1910.134 - Respiratory Protection
1910.136 - Occupational foot protection
1910.138 - Hand Protection
Eye and face protection - ANSI Z87.1
Foot protection - ANSI Z41
Respirators must be NIOSH approved.



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